Remarks

In view of the above amendments to the claims and the following discussion, the applicants submit that none of the claims now pending in the application are anticipated under the provisions of 35 U. S. C. § 102, or obvious under the provisions of 35 U. S. C. § 103. Thus, the applicants believe that all of these claims are in allowable form.

REJECTIONS

A. 35 U. S. C. § 102

1. Claims 1 and 9 are not anticipated by Cole et al.

Claims 1 and 9 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Cole et al. (U.S. Patent 7,098,936 issued August 29, 2006). The applicants submit that these claims are not anticipated by this reference.

Referring to FIGS. 5 and 7, the invention as recited in claims 1 and 9, respectively, concerns a method and system that employs a novel pixel filter element 320 that facilitates the scaling of pixel values corresponding to pixel elements of a Spatial Light Modulator (SLM). Using a SLM, a displayed image is produced by a matrix of pixels comprised of at least a first and a second set of pixels. At least the first set of pixels is superimposed on the second set of pixels to form the displayed image. When these sets of pixels are superimposed, overlapping pixels of the matrix can produce image distortions due to the summing of their pixel values. Such pixel values can comprise, but are not limited to such values as luminance and chrominance.

The pixel values of overlapping pixels can be scaled using first scaling factor β and second scaling factor α to compensate for distortional changes in the displayed image had such scaling not occurred. In particular, the novel pixel

filter sums the pixel values of the overlapping pixels and then scales the summed pixel value using second scaling factor α. Similarly, the pixel value of the respective pixel that is overlapped by overlapping pixels is also scaled using first scaling factor β. After the scaling factors α and β have been applied to the pixel values, the filter subtracts the scaled first respective pixel value from the summed pixel values. This has the advantage of determining an adjusted value of the first respective pixel value. Moreover, the first and second scaling factors α (651) and β (652), are in turn, variably adjustable according to selected adjustment factors x (655) and y (657), respectively. The presence of adjustment factors (655, 657) provide an increased level of filter design flexibility that is not addressed in the prior art. By selecting particular values for adjustment factors x and y, one can adjust affected pixel values to a much finer scale than what was otherwise available (*See*, Applicant's Specification at page 13, line 17 to page 14, line 7 and page 15, lines 23-29).

Cole et al. is directed to a method of displaying an image having a first aspect ratio with a display device having a second aspect ratio (*see*, Cole et al. at column 1, lines 61-63). In Cole et al., a displayed image of a first sub-frame of the image and a displayed image of a second sub-frame of the image is optically scaled in one direction by spatially offsetting the second sub-frame from the first sub-frame in one direction and alternating between displaying the first sub-frame in a first position and the second sub-frame in a second position offset from the first position with the display device (*see*, Cole et al. at column 2, lines 1-7).

Cole et al. does not in any way describe or suggest the step of summing values of pixels that overlap a first respective pixel. Cole et al. also does not teach or suggest subtracting a scaled respective pixel value from a scaled summed pixel value to determine an adjusted value of a first respective pixel. As such, claims 1 and 9 are patentable over Cole et al.

B. 35 U. S. C. § 103

1. Claims 2-3, 6 and 11 are patentable over Cole et al. in view of Platt et al.

Claims 2-3, 6 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cole et al. (U.S. Patent 7,098,936 issued August 29, 2006) in view of Platt et al. (U.S. Patent 6,973,210 issued December 6, 2005). The applicants submit that these claims are not rendered obvious by the combination of these references.

Referring to FIGS. 5 and 7, the invention as recited in claims 2-3, 6 and 11 which depend directly or indirectly from claims 1 and 9, respectively, concerns a method and system that employs a novel pixel filter element 320 that facilitates the scaling of pixel values corresponding to pixel elements of a Spatial Light Modulator (SLM). Using a SLM, a displayed image is produced by a matrix of pixels comprised of at least a first and a second set of pixels. At least the first set of pixels is superimposed on the second set of pixels to form the displayed image. When these sets of pixels are superimposed, overlapping pixels of the matrix can produce image distortions due to the summing of their pixel values. Such pixel values can comprise, but are not limited to such values as luminance and chrominance.

The pixel values of overlapping pixels can be scaled using first scaling factor β and second scaling factor α to compensate for distortional changes in the displayed image had such scaling not occurred. In particular, the novel pixel filter sums the pixel values of the overlapping pixels and then scales the summed pixel value using second scaling factor α. Similarly, the pixel value of the respective pixel that is overlapped by overlapping pixels is also scaled using first scaling factor β. After the scaling factors α and β have been applied to the pixel values, the filter subtracts the scaled first respective pixel value from the summed pixel values. This has the advantage of determining an adjusted value of the first

respective pixel value. Moreover, the first and second scaling factors α (651) and β (652), are in turn, variably adjustable according to selected adjustment factors x (655) and y (657), respectively. The presence of adjustment factors (655, 657) provide an increased level of filter design flexibility that is not addressed in the prior art. By selecting particular values for adjustment factors x and y, one can adjust affected pixel values to a much finer scale than what was otherwise available (*See*, Applicant's Specification at page 13, line 17 to page 14, line 7 and page 15, lines 23-29).

Cole et al. is directed to a method of displaying an image having a first aspect ratio with a display device having a second aspect ratio (*see*, Cole et al. at column 1, lines 61-63). In Cole et al., a displayed image of a first sub-frame of the image and a displayed image of a second sub-frame of the image is optically scaled in one direction by spatially offsetting the second sub-frame from the first sub-frame in one direction and alternating between displaying the first sub-frame in a first position and the second sub-frame in a second position offset from the first position with the display device (*see*, Cole et al. at column 2, lines 1-7).

Cole et al. does not in any way describe or suggest the step of summing values of pixels that overlap a first respective pixel. Cole et al. also does not teach or suggest subtracting a scaled respective pixel value from a scaled summed pixel value to determine an adjusted value of a first respective pixel. As such, claims 2-3, 6 and 11 are patentable over Cole et al.

Platt et al. is directed to an image processing method including a scaling operation (*see*, Platt et al. at column 2, lines 60-61).

Platt et al. does not in any way describe or suggest the step of summing values of pixels that overlap a first respective pixel. Platt et al. also does not teach or suggest subtracting a scaled respective pixel value from a scaled summed pixel value to determine an adjusted value of a first respective pixel. As such, claims 2-3, 6 and 11 are patentable over Platt et al.

Furthermore, the combination of Cole et al. and Platt et al. neither discloses nor suggests the step of summing values of pixels that overlap a first

respective pixel, or subtracting a scaled respective pixel value from a scaled summed pixel value to determine an adjusted value of a first respective pixel. As such, claims 2-3, 6 and 11 are patentable over the combination of Cole et al. with Platt et al.

2. Claims 7-8 are patentable over Cole et al. in view of Platt et al. and further in view of Damera-Venkata et al.

Claims 7-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cole et al. (U.S. Patent 7,098,936 issued August 29, 2006) in view of Platt et al. (U.S. Patent 6,973,210 issued December 6, 2005) and further in view of Damera-Venkata et al. (U.S. Patent 7,190,380 issued March 13, 2007). The applicants submit that these claims are not rendered obvious by the combination of these references.

Referring to FIGS. 5 and 7, the invention as recited in claims 7-8 which depend directly from claim 1, concerns a method that employs a novel pixel filter element 320 that facilitates the scaling of pixel values corresponding to pixel elements of a Spatial Light Modulator (SLM). Using a SLM, a displayed image is produced by a matrix of pixels comprised of at least a first and a second set of pixels. At least the first set of pixels is superimposed on the second set of pixels to form the displayed image. When these sets of pixels are superimposed, overlapping pixels of the matrix can produce image distortions due to the summing of their pixel values. Such pixel values can comprise, but are not limited to such values as luminance and chrominance.

The pixel values of overlapping pixels can be scaled using first scaling factor β and second scaling factor α to compensate for distortional changes in the displayed image had such scaling not occurred. In particular, the novel pixel filter sums the pixel values of the overlapping pixels and then scales the summed pixel value using second scaling factor α. Similarly, the pixel value of the respective pixel that is overlapped by overlapping pixels is also scaled using first

scaling factor β. After the scaling factors α and β have been applied to the pixel values, the filter subtracts the scaled first respective pixel value from the summed pixel values. This has the advantage of determining an adjusted value of the first respective pixel value. Moreover, the first and second scaling factors α (651) and β (652), are in turn, variably adjustable according to selected adjustment factors x (655) and y (657), respectively. The presence of adjustment factors (655, 657) provide an increased level of filter design flexibility that is not addressed in the prior art. By selecting particular values for adjustment factors x and y, one can adjust affected pixel values to a much finer scale than what was otherwise available (*See*, Applicant's Specification at page 13, line 17 to page 14, line 7 and page 15, lines 23-29).

Cole et al. is directed to a method of displaying an image having a first aspect ratio with a display device having a second aspect ratio (*see*, Cole et al. at column 1, lines 61-63). In Cole et al., a displayed image of a first sub-frame of the image and a displayed image of a second sub-frame of the image is optically scaled in one direction by spatially offsetting the second sub-frame from the first sub-frame in one direction and alternating between displaying the first sub-frame in a first position and the second sub-frame in a second position offset from the first position with the display device (*see*, Cole et al. at column 2, lines 1-7).

Cole et al. does not in any way describe or suggest the step of summing values of pixels that overlap a first respective pixel. Cole et al. also does not teach or suggest subtracting a scaled respective pixel value from a scaled summed pixel value to determine an adjusted value of a first respective pixel. As such, claims 7-8 are patentable over Cole et al.

Platt et al. is directed to an image processing method including a scaling operation (*see*, Platt et al. at column 2, lines 60-61).

Platt et al. does not in any way describe or suggest the step of summing values of pixels that overlap a first respective pixel. Platt et al. also does not teach or suggest subtracting a scaled respective pixel value from a scaled

summed pixel value to determine an adjusted value of a first respective pixel. As such, claims 7-8 are patentable over Platt et al.

Damera-Venkata et al. is directed to generating and displaying spatially offset dithered sub-frames (*see*, Damera-Venkata et al. at column 1, lines 56-66).

Damera-Venkata et al. does not in any way describe or suggest the step of summing values of pixels that overlap a first respective pixel. Damera-Venkata et al. also does not teach or suggest subtracting a scaled respective pixel value from a scaled summed pixel value to determine an adjusted value of a first respective pixel. As such, claims 7-8 are patentable over Damera-Venkata et al.

Furthermore, the combination of Cole et al., Platt et al. and Damera-Venkata et al. neither discloses nor suggests the step of summing values of pixels that overlap a first respective pixel, or subtracting a scaled respective pixel value from a scaled summed pixel value to determine an adjusted value of a first respective pixel. As such, claims 7-8 are patentable over the combination of Cole et al. with Platt et al. and Damera-Venkata et al.

3. Claim 12 is patentable over Cole et al. in view of Damera-Venkata et al.

Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Cole et al. (U.S. Patent 7,098,936 issued August 29, 2006) in view of Damera-Venkata et al. (U.S. Patent 7,190,380 issued March 13, 2007). The applicants submit that these claims are not rendered obvious by the combination of these references.

Referring to FIGS. 5 and 7, the invention as recited in claim 12, which depends directly from claim 9, concerns a system that employs a novel pixel filter element 320 that facilitates the scaling of pixel values corresponding to pixel elements of a Spatial Light Modulator (SLM). Using a SLM, a displayed image is produced by a matrix of pixels comprised of at least a first and a second set of pixels. At least the first set of pixels is superimposed on the second set of pixels to form the displayed image. When these sets of pixels are superimposed,

overlapping pixels of the matrix can produce image distortions due to the summing of their pixel values. Such pixel values can comprise, but are not limited to such values as luminance and chrominance.

The pixel values of overlapping pixels can be scaled using first scaling factor β and second scaling factor α to compensate for distortional changes in the displayed image had such scaling not occurred. In particular, the novel pixel filter sums the pixel values of the overlapping pixels and then scales the summed pixel value using second scaling factor α. Similarly, the pixel value of the respective pixel that is overlapped by overlapping pixels is also scaled using first scaling factor β. After the scaling factors α and β have been applied to the pixel values, the filter subtracts the scaled first respective pixel value from the summed pixel values. This has the advantage of determining an adjusted value of the first respective pixel value. Moreover, the first and second scaling factors α (651) and β (652), are in turn, variably adjustable according to selected adjustment factors x (655) and y (657), respectively. The presence of adjustment factors (655, 657) provide an increased level of filter design flexibility that is not addressed in the prior art. By selecting particular values for adjustment factors x and y, one can adjust affected pixel values to a much finer scale than what was otherwise available (*See*, Applicant's Specification at page 13, line 17 to page 14, line 7 and page 15, lines 23-29).

Cole et al. is directed to a method of displaying an image having a first aspect ratio with a display device having a second aspect ratio (*see*, Cole et al. at column 1, lines 61-63). In Cole et al., a displayed image of a first sub-frame of the image and a displayed image of a second sub-frame of the image is optically scaled in one direction by spatially offsetting the second sub-frame from the first sub-frame in one direction and alternating between displaying the first sub-frame in a first position and the second sub-frame in a second position offset from the first position with the display device (*see*, Cole et al. at column 2, lines 1-7).

Cole et al. does not in any way describe or suggest the step of summing values of pixels that overlap a first respective pixel. Cole et al. also does not

teach or suggest subtracting a scaled respective pixel value from a scaled summed pixel value to determine an adjusted value of a first respective pixel. As such, claim 12 is patentable over Cole et al.

Damera-Venkata et al. is directed to generating and displaying spatially offset dithered sub-frames (*see*, Damera-Venkata et al. at column 1, lines 56-66).

Damera-Venkata et al. does not in any way describe or suggest the step of summing values of pixels that overlap a first respective pixel. Damera-Venkata et al. also does not teach or suggest subtracting a scaled respective pixel value from a scaled summed pixel value to determine an adjusted value of a first respective pixel. As such, claim 12 is patentable over Damera-Venkata et al.

Furthermore, the combination of Cole et al. and Damera-Venkata et al. neither discloses nor suggests the step of summing values of pixels that overlap a first respective pixel, or subtracting a scaled respective pixel value from a scaled summed pixel value to determine an adjusted value of a first respective pixel. As such, claim 12 is patentable over the combination of Cole et al. with Damera-Venkata et al.

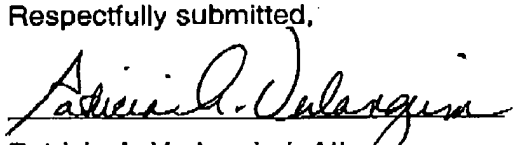
CONCLUSION

Thus, the applicants submit that none of the claims, presently in the application, are anticipated under the provisions of 35 U. S. C. § 102, or obvious under the provisions of 35 U. S. C. § 103. Consequently, the applicants believe that all of the claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application,

it is requested that the Examiner telephone Ms. Patricia A. Verlangieri, at (609) 734-6867, so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,



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